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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/817,124	03/27/2001	Toshiyuki Sudo	2355.12213	8950
5514	7590	08/10/2004	EXAMINER	
FITZPATRICK CELLA HARPER & SCINTO 30 ROCKEFELLER PLAZA NEW YORK, NY 10112			PAPPAS, PETER	
			ART UNIT	PAPER NUMBER
			2671	6

DATE MAILED: 08/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/817,124

Applicant(s)

SUDO ET AL.

Examiner

Peter-Anthony Pappas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13 and 25-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13 and 25-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 29 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention (page 6, lines 1-5).

Claim Objections

3. Claim 29 is objected to because of the following informalities: "...said controller..." should read "...a controller...". Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

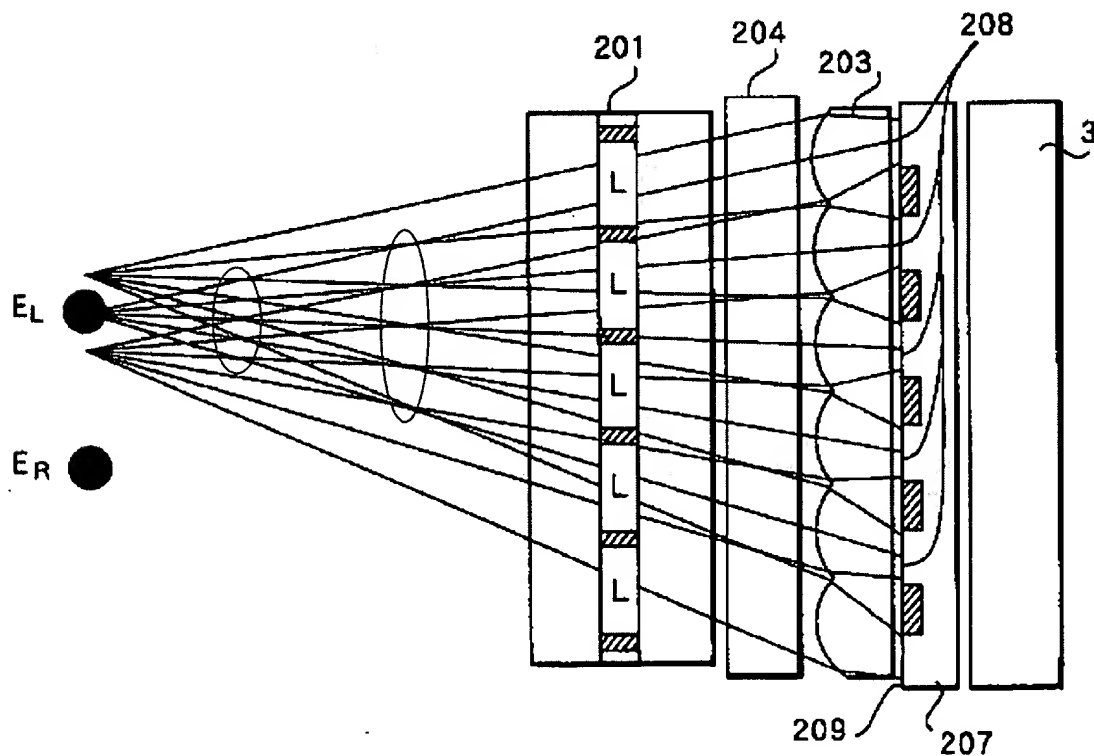
(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. Claims 1-2, 5-6, 9-10, 13 and 26-28 are rejected under 35 U.S.C. 102(a) as being anticipated by Osaka et al. (U.S. Patent No. 6, 023, 277).

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6. In regards to claim 1 Osaka et al. teaches a display control apparatus and a display control method (column 4, lines 43-50; column 23, lines 8-9; Fig. 23).

At least two parallax images are divided up into pixels and are stored in horizontal stripes of a stripe image, which is used to generate a viewable stereoscopic image (column 24, lines 1-27; Figs. 24A-B). A display driver instructed by a host computer (3D image reproduction data generator) to perform a display operation uses an object analyzer to determine whether the file of an object to be displayed possesses 3D image data (Abstract).



Osaka et al. teaches a plurality of rays are directed (irradiated) by a stereoscopic image display device at an observer's one eye for the display of a stereoscope 3D image (column 23, lines 16-45), wherein said plurality of rays carrying image data intersect at a plurality of locations in air (Fig. 2; Fig. 22A-B) –

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see the figure above, wherein an example of said intersections, between elements E_L and 201, are circled to indicate their respective locations in space.

7. In regards to claim 2 Osaka et al. teaches that a 3D image is synthesized from a plurality of parallax images of a plurality of viewpoints (column 26, lines 40-43). Figs. 22A-B teach six blocks (ray sources) of mask 207, which are passed through lenticular sheets 40 and 41, in alignment with six respective pixel blocks of LCD 1 identified as R.

8. In regards to claim 5 Osaka et al. teaches the use of a mask pattern 207, which is a stripe image (column 24, lines 22-27, and Fig. 22A-B), wherein a stripe image is created by alternately arraying the stripe pixels obtained from parallax images (column 26, lines 47-54, and Figs. 24A-B). It is noted that a mask pattern 207, which is created through the combination of parallax image pixel data taken of a given object (the object), is considered an area board that limits the effective area for 3D representation of said given object, because the display of said 3D representation is limited (bound) by the dimensions of said mask pattern 207. As such the mask pattern 207 represents a combination of both said given object and its respective area as well as the respective relevant surrounding area of said object.

9. In regards to claim 6 it is inherent that a computer generated image, comprising of pixels, and displayed via a computer display device is considered to comprise of virtual (not real, i.e. simulated real) space constructed via (on) a computer. The rationale disclosed in the rejection of claim 5, in regards to a stripe image, is incorporated herein.

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10. In regards to claim 9 the rationale disclosed in the rejection of claim 2 is incorporated herein. It is noted that the single intersection point of rays at an observer's one eye is considered to be part of a plane and thus is considered located near the observer. Additionally, viewing points are considered the number of ray sources. Osaka et al. teaches the use of a mask pattern 207, which is a stripe image (column 24, lines 22-27; Fig. 22A-B), wherein a stripe image is created by alternately arraying the stripe pixels obtained from each of the parallax images (column 26, lines 47-54; Figs. 24A-B). The creation of said ray sources are thus dependent upon the stripe image, which is in turn dependent on the parallax images.

11. In regards to claim 10 Osaka et al. teaches a 3D image is synthesized from a plurality of parallax image of a plurality of viewpoints. Each parallax image is divided up into pixels, according to the respective parallax image being divided, and a stripe image is created by alternately arraying the strip pixels (column 26, lines 42-54; column 24, lines 22-27; Figs. 24A-B).

12. In regards to claim 13 the rationale disclosed in the rejection of claim 1 is incorporated herein.

13. In regards to claim 25 Osaka et al. teaches that it may be so arranged that the control program for implementing the processing procedure (described later) by way of the CPU 11 is supplied from a storage medium such as a floppy disk and stored in a RAM (column 15, lines 10-13).

14. In regards to claim 26 the rationale disclosed in the rejection of claim 1 is incorporated herein.

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15. In regards to claim 27 the rationale disclosed in the rejection of claim 1 is incorporated herein.

16. In regards to claim 28 the rationale disclosed in the rejection of claim 5, specifically in regards to mask pattern 207, is incorporated herein. Osaka et al. teaches the mask apertures in the cross section of FIG. 22A and the mask apertures in the cross section of FIG. 22B are formed complementarily so that the mask pattern 207 (display panel) defines a checkerboard of apertures and light blocking portions (controlling light intensity) in addition to non-light blocking portions allow light to pass through (column 23, lines 25-50; Figs. 22A-22B). Osaka et al. teaches a mask pattern paint unit 8 (controller) controls the painting of the checkered mask pattern (column 14, lines 50-57; Fig. 8).

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 3-4, 11 and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osaka et al. (U.S. Patent No. 6, 023, 277), as applied to claims 1-2, 5-6, 9-10, 13 and 26-28.

19. In regards to claims 3 and 4 Osaka et al. fails to explicitly teach the clipping, through trimming, of an effective area (image representative of a 3D

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scene for display on a display) for generating said 3D image reproduction data and then stretching or shrinking said trimmed image.

It is well known to both clip and then resize an image (official notice; see MPEP § 2144.03), and thus it would have been obvious to one skilled in the art, at the time of the applicant's invention, to crop (clip/trim) a given image, wherein said image is representative of a 3D scene on a display device, and then resize (stretch or shrink) said cropped image respective to the view dimensions of said display device, because through cropping increased resolution of a given area of interest within said image can be achieved, resulting in enhanced clarity of said scene. Additionally through the utilization of resizing, post cropping, to said image one is able to achieve further increased viewability as the dimensions of the cropped image can be set to those dimensions, for example, of the display device so that the amount of the image desirable for being viewed is maximized regardless of the display device it is displayed on.

20. In regards to claim 11 the claim language appears to say nothing more than $Q(m,n)$, a two-dimensional parallax image array, is assigned the value from $P(m,n)$, a two-dimensional image array. Osaka et al. teaches a 3D image is synthesized from a plurality of parallax images of a plurality of viewpoints (column 26, lines 40-43). At least two parallax images are divided up into pixels and are stored in horizontal stripes of a stripe image, which is used to generate a viewable stereoscopic image (column 24, lines 1-27; Fig. 24A-B).

It is well known to store image data in memory via such means as an array, wherein the dimensions of said array correspond to the dimensions of a

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given image represented by said image data, as well as to copy contents from one given array to another, based on the dimensions of said array (official notice; see MPEP § 2144.03), and thus it would have been obvious to one skilled in the art, at the time of the applicant's invention, to store a 2D image (i.e. a parallax image) in pixel form in a 2D image array, wherein the bounds of said array were based on width and height of the respective 2D image, because it is conventional to store digital images in memory in such a form as an array, wherein said array has dimensions corresponding to the levels of dimensions of the respective image data that is to be stored. Furthermore, it would have been obvious to one skilled in the art, at the time of the applicant's invention, to allow for the copying of image data between identically bounded (i.e. two-dimensional) arrays, because said copying would allow data from each array (i.e. pixel data) to more easily be copied to a corresponding location in the second array and thus would provide a secondary storage location (i.e. buffer) in memory for which to store said image while another image was loaded and stored in the original array.

21. In regards to claim 29 Osaka et al. fails to explicitly teach wherein a controller associates each light source with a coordinate of each pixel on the parallax images according to coordinates of the viewpoints where the parallax images are obtained, and coordinates of the light sources and colors and intensities of rays emitted from the light sources to the viewpoints are based on the colors and brightness of corresponding pixels.

It is well known that when image data, comprising of pixels, contains color and intensity (brightness) information to maintain said properties when said

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image data is emitted via light rays, for display, from a given display device (official notice; see MPEP § 2144.03), and thus it would have been obvious to one skilled in the art, at the time of the applicant's invention, to maintain said properties throughout the display process, wherein said display process involves emitting light rays to a given user (i.e. to their eyes), because by maintaining said information the data integrity for said image is maintained and thus accurately display for said given user, rather than distorted if said properties were, for example, discarded during the emitting of said image.

22. In regards to claim 30 the rationale disclosed in the rejection of claims 2 and 29 are incorporated herein.

23. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osaka et al. (U.S. Patent No. 6, 023, 277), as applied to claims 1-2, 5-6, 9-10, 13 and 26-28, in view of Ishikawa et al. (U.S. Patent No. 6, 549, 650 B1).

24. In regards to claim 7 Osaka et al. teaches that in addition to the display of 3D stereoscopic images, 2D images can be also viewed in the same manner as presented by an ordinary 2D display (column 19, lines 46-50). It is noted that the means by which this switching of display modes is accomplished varies according to the embodiment. Osaka et al. teaches a 3D image is synthesized from a plurality of parallax images of a plurality of viewpoints (column 26, lines 40-43). However, Osaka et al. fails to explicitly teach the locations of the viewing points move in the imaging system such that the optical axis (lens) of the imaging system will move in parallel. Ishikawa et al. teaches, through prior art, two able to be rotated image sensing optical systems 6701a and 6701b, which are set to

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have no convergence and as such are set parallel to each other. It is noted that the optical axis for a respective image sensing optical system is considered to be defined by the orientation of its lens. Ishikawa et al. teaches that a system such as the one shown in Fig. 1, with parallax d and no convergence, is best suited for the display of stereoscopic display (column 3, lines 1-67, and column 4, lines 1-62). Thus, for best viewability for stereoscopic images one would ideally want no convergence and parallax to be present in a given system.

It would have been obvious to one skilled in the art, at the time of the applicant's invention, to utilize image sensing optical systems as taught Ishikawa et al. in the system disclosed by Osaka et al. for the capture of parallax data used to display 3D stereoscopic images, because by utilizing an orientation of image sensing optical systems as taught by Ishikawa et al. one would achieve a greater quality of captured data with parallax, which could be captured, and used for the display of 3D stereoscopic images created from said data thus improving the overall quality of said 3D stereoscopic images when displayed.

25. In regards to claim 8 Osaka et al. teaches that in addition to the display of 3D stereoscopic images, 2D images can be also viewed in the same manner as presented by an ordinary 2D display (column 19, lines 46-50). It is noted that the means by which this switching of display modes is accomplished varies according to the embodiment. Osaka et al. teaches a 3D image is synthesized from a plurality of parallax images of a plurality of viewpoints (column 26, lines 40-43). Osaka et al. fails to explicitly teach the locations of the viewing points move in the imaging system such that the optical axis (lens) of the imaging

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system will always pass through the center of said effective area. Ishikawa et al. teaches, through prior art, two able to be rotated image sensing optical systems 6701a and 6701b, which are set to have convergence and are rotated by an amount defined by said convergence. It is noted that the optical axis for a respective image sensing optical system is considered to be defined by the orientation of its lens. Ishikawa et al. teaches that a system such as the one shown in Fig. 2, with convergence and no parallax, make obtaining a stereoscopic not possible (column 3, lines 1-67, and column 4, lines 1-62). Thus, for best viewability for non-stereoscopic images one would ideally want no parallax and convergence to be present in a given system.

It would have been obvious to one skilled in the art, at the time of the applicant's invention, to utilize image sensing optical systems as taught Ishikawa et al. in the system disclosed by Osaka et al. for the capture of data used to display 2D images, because by utilizing an orientation of image sensing optical systems as taught by Ishikawa et al. one would be able to achieve a greater quality of data without parallax and thus without stereoscopic features to be captured and used for the display of 2D images created from said data thus improving the overall quality of said 2D images when displayed.

Response to Arguments

26. In response to applicant's remarks in regards to the drawing objection said objection is withdrawn in lieu of said remarks.

27. In response to applicant's remarks in regards to the rejections made under 35 U.S.C § 112 said rejections are withdrawn in lieu of said remarks.

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28. In response to applicant's remarks in regards to the rejection of claims 1, 13, 28 and 30 see the respective rejections above.

Conclusion

29. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter-Anthony Pappas whose telephone number is 703-305-8984. The examiner can normally be reached on M-F 10:00am-7:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman can be reached on 703-305-9798. The

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fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Peter-Anthony Pappas
Examiner
Art Unit 2671

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